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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,960	06/29/2001	Alpar Juttner	040000-758	6098
27045	7590	03/30/2005	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR C11 PLANO, TX 75024			ABELSON, RONALD B	
			ART UNIT	PAPER NUMBER
			2666	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/893,960	Applicant(s) JUTTNER ET AL.	
	Examiner Ronald Abelson	Art Unit 2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 6-9 and 13-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### ***Drawings***

1. Figures 1 and 2 should be designated by a legend such as -- Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claim 15 and 16 are objected to because of the following informalities: in claim 15, "second path delay" should be changed to "second path cost". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 12 recites the limitation "third path" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this

Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that

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was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhuri (US 6,411,946) in view of Parsa.

Regarding claim 1, Chaudhuri teaches a method for determining a path subject to constraint wherein parameters include delay and least cost (delay, cost, constraints, col. 6 lines 16-18) in a multi-path communication system (col. 5 lines 65-67).

Chaudhuri teaches finding a first path with a minimum cost and first path delay (weight space, col. 3 lines 28-34, network parameters, col. 4 lines 36-44, delay, cost, col. 6 lines 16-18). Note, the "weight space" includes cost and delay. An error function is based on all possible routes given each route's cost and delay. Therefore, a first path with a minimum cost and first path delay is considered.

Chaudhuri teaches finding a second path with a minimum delay and second path cost (weight space, col. 3 lines 28-34, network parameters, col. 4 lines 36-44, delay, cost, col. 6

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lines 16-18). Note, the "weight space" includes cost and delay. An error function is based on all possible routes given each route's cost and delay. Therefore, a second path with a minimum delay and second path cost is considered.

Chaudhuri teaches determining the path based, in part, on the first and second path (col. 4 lines 36-44, col. 6 lines 16-24).

Although Chaudhuri teaches determining a path based upon delay and constraints (delay, feasibility constraints, col. 6 lines 16-24, the reference is silent on a delay constraint.

Parsa teaches optimization based upon delay constraint (minimum-cost, delay constraints, pg. 461 abstract, last paragraph).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Chaudhuri by solving for the optimal path based upon a delay constraint. This modification can be accomplished by choosing an appropriate value for the delay constraint and only selecting paths for consideration wherein the delay is less than the delay constraint. This would improve the system by ensuring that the path can be traversed in an appropriate time period.

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Regarding claim 2, determining that if the first path delay is less than a maximum allowable delay, then the first path is the delay constrained least cost path. Note, as shown above the first path is a minimum cost and first path delay (Chaudhuri: weight space, col. 3 lines 28-34, network parameters, col. 4 lines 36-44, delay, cost, col. 6 lines 16-18) and further Chaudhuri teaches solving for the least cost path (selecting according to cost function, col. 4 lines 36-44). Parsa teaches selection according to a maximum allowable delay (minimum-cost, delay constraints, pg. 461 abstract, last paragraph). Therefore, the combination teaches the limitations of claim 2.

Regarding claim 3, if the second path delay is greater than the maximum allowable delay then there is no delay constrained least cost path. As shown in claim 1, the second path is the minimum delay and second path cost. By definition, for a delay-constrained problem, if the minimum delay is greater than the maximum allowable delay, then no solution exists.

Regarding claim 4, determining the delay constrained least cost path by using a Lagrange relaxation variable (Chaudhuri: Lagrange multiplier, col. 6 lines 20-23).

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Regarding claim 5, calculating a Lagrange relaxation variable (Chaudhuri: Lagrange multiplier, col. 6 lines 20-23). Regarding the limitation determining the delay constrained least cost path based on the Lagrange relaxation variable, as previously shown with respect to claim 1, Chaudhuri teaches determining a least cost path subject to delay and constraint and Parsa teaches delay constraint.

Regarding claim 10, finding a first path with minimum cost comprises using a Dijkstra Algorithm (Chaudhuri: col. 6 lines 11-14).

Regarding claim 11, finding a second path with minimum delay comprises using a Dijkstra Algorithm (Chaudhuri: col. 6 lines 11-14).

***Allowable Subject Matter***

8. Claims 17-20 are allowed and claims 15 and 16 would be allowed if the objection to claim 15 is removed.

9. Claims 6-9, 13, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter.

Regarding claim 6, nothing in the prior art of the record teaches or fairly suggests calculating a first sum equal to the cost of the first path less the cost of the second path, in view of the teachings of Chaudhuri and Parsa in combination with all the limitations listed in the claim.

Regarding claim 7, nothing in the prior art of the record teaches or fairly suggests calculating a first sum equal to the cost of the first path less the cost of the second path, in view of the teachings of Chaudhuri and Parsa in combination with all the limitations listed in the claim.

Regarding claim 8, nothing in the prior art of the record teaches or fairly suggests modified cost functions, in view of the teachings of Chaudhuri and Parsa in combination with all the limitations listed in the claim.

Regarding claim 14, nothing in the prior art of the record teaches or fairly suggests determining if the cost of the second path is within a certain percentage of the cost of the first path, in view of the teachings of Chaudhuri and Parsa in combination with all the limitations listed in the claim.

Regarding claims 15 and 17, nothing in the prior art of the record teaches or fairly suggests generating a series of

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Lagrange relaxation variables, in view of the teachings of Chaudhuri and Parsa in combination with all the limitations listed in the claim.

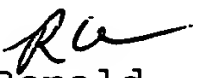
### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Abelson whose telephone number is (571) 272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Ronald Abelson  
Examiner  
Art Unit 2666

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3/28/05